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GP: 2838

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Robert H. Wills
Serial No. : 09/811,342
Filed : March 16, 2001
Title : ANTI-ISLANDING METHOD AND APPARATUS FOR DISTRIBUTED POWER GENERATION

Art Unit : 2838
Examiner : Unknown

Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Prior to examination, please amend the application as follows.

In the Specification

Replace the paragraph beginning at page 1, line 5 with the following rewritten paragraph.

--This application claims priority under 35 U.S.C. §120 to U.S. Patent Application Serial No. 09/198,919, filed November 24, 1998, and entitled "Anti-Islanding Method And Apparatus For Distributed Power Generation, now U.S. Patent No. 6,219,623 B1, which, in turn, claims priority under U.S.C. §119(e) to U.S. Provisional Patent Application Serial No. 60/066,460, filed November 24, 1997, both of which are incorporated by reference herein.--

In the Claims

Cancel claims 1-20.

Add the following claims.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

June 25, 2001
Date of Deposit

Joanne Boyle
Signature

JOANNE BOYLE
Typed or Printed Name of Person Signing Certificate

--21. (New) An anti-islanding apparatus for isolating a power source from an electrical grid, comprising:

a converter connectable between the power source and the grid;

a first device adapted to measure a parameter of the grid;

a circuit for detecting a change in the grid parameter;

a controller adapted to change an output parameter of the converter in response to a detected change in the grid parameter;

a second device adapted to measure the output parameter of the converter; and

a switch adapted to disconnect the converter from the grid when the converter output parameter is outside pre-defined limits.

22. (New) The anti-islanding apparatus of claim 21, wherein the parameter of the grid comprises at least one of a voltage, a phase and a frequency.

23. (New) The anti-islanding apparatus of claim 21, wherein the measured output parameter of the power converter is the same parameter as the measured grid parameter.

24. (New) The anti-islanding apparatus of claim 21, wherein the measured output parameter of the power converter comprises voltage.

25. (New) The anti-islanding apparatus of claim 21, wherein the first device and circuit are configured to provide the controller with successive measurements of the grid parameter.

26. (New) The anti-islanding apparatus of claim 25, wherein the controller is adapted to vary an increment by which the output parameter of the converter is changed.

27. (New) The anti-islanding apparatus of claim 26, wherein the controller is adapted such that each time a successive measurement of the grid parameter indicates a grid parameter

change, the controller will increase the increment by which the output parameter of the converter is changed.

28. (New) A method of operating an anti-islanding apparatus for isolating a power source from an electrical grid, comprising:

measuring a change in a grid parameter;

measuring an output parameter of a converter;

changing an output parameter of a converter in response to the measured change in grid parameter; and

disconnecting the converter from the grid when the output parameter is outside pre-defined limits.

29. (New) The method of claim 28, wherein the grid parameter comprises at least one of a voltage, a phase and a frequency.

30. (New) The method of claim 28, wherein the output parameter of the converter comprises the same parameter as the grid parameter.

31. (New) The method of claim 30, wherein the output parameter of the converter comprises voltage.

32. (New) A method of operating an anti-islanding apparatus for isolating a power source from an electrical grid, comprising:

measuring a grid parameter at a first time to produce a first measurement;

measuring a grid parameter at a second time to produce a second measurement;

calculating a trend in grid voltage by comparing the first measurement to the second measurement;

communicating a signal to a converter which produces a response in an output parameter of the converter;

measuring the output parameter of the converter subsequent to the signal producing the response in the output parameter; and

disconnecting the converter from the grid when the output parameter of the converter is outside a pre-defined limit.

33. (New) The method of claim 32, wherein the grid parameter at least one of a voltage, a phase and a frequency.

34. (New) A system, comprising:

a first power source in electrical communication with an electrical power grid;

a controller electrically coupled to the first power source and configured to monitor at least one characteristic of the electrical power grid, the controller further being configured to communicate a signal which produces at least one response from the first power source based upon the at least one characteristic of the electrical power grid; and

a disconnect device in electrical communication with the first power source wherein, the disconnect device is configured to disconnect the first power source from the electrical power grid when the at least one response from the first power source exceeds a predetermined limit.

35. (New) The system of claim 34, wherein the first power source comprises a fuel cell system.

36. (New) The system of claim 34, further comprising a plurality of power sources in electrical communication with the electrical power grid, the plurality of power sources each having a controller configured to monitor at least one characteristic of the electrical power grid, each individual controller further being configured to communicate a signal which produces at least one response from the respective power source based upon the at least one characteristic of the electrical power grid, and a disconnect device in electrical communication with each of the plurality of power sources source wherein, the disconnect device is configured to disconnect the power source from the electrical power grid when the at least one response from the power source exceeds a predetermined limit.

37. (New) The system of claim 36, wherein the at least one response from each the respective power sources comprises a change in an output parameter.

38. (New) The system of claim 37, wherein the output parameter comprises at least one of a voltage, a phase and a frequency.

39. (New) The system of claim 38, wherein the at least one response from each of the respective power sources comprises an increase in the magnitude of change from any previous changes.

40. (New) The system of claim 39, wherein the increase in the magnitude of change from any previous changes comprises an increase in the amount of reduction of the output parameter.

41. (New) A method of operating an anti-islanding apparatus for isolating a power source from an electrical grid, comprising:

making a first change in an output parameter of a converter in electrical communication with the power source and the grid;

scanning a grid parameter for a change;

making a second change in the output parameter of the converter in response to a change in the scanned grid parameter;

measuring the output parameter of the converter; and

disconnecting the converter from the grid when the output parameter is outside a pre-defined limit.

42. (New) The method of claim 41, wherein the grid parameter comprises at least one of a voltage a phase and a frequency.

43. (New) The method of claim 42, wherein the output parameter of the converter is the same as the grid parameter.

44. (New) The method of claim 41, further comprising varying the increment of the second change in the output parameter.

45. (New) The method of claim 44, wherein the increment by which the second output parameter is changed increases when a grid parameter scan identifies a successive change in the grid parameter in one direction.--

REMARKS

Applicants have cancelled claims 1-20 and added new claims 21-45. Claims 21-45 are presented for examination.

Attached is a marked-up version of the changes being made by the current amendment.

Applicant believes the claims are in condition for allowance, which action is respectfully requested. Enclosed is a $125 check for excess claim fees. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: June 25, 2001

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Version with markings to show changes made

In the Specification

Paragraph beginning at page 1, line 5 has been amended as follows.

--This application claims priority under 35 U.S.C. §120 to U.S. Patent Application Serial No. 09/198,919, filed November 24, 1998, and entitled "Anti-Islanding Method And Apparatus For Distributed Power Generation, now U.S. Patent 6,219,62335, which, in turn, claims priority under U.S.C. §119(e) [from a provisional patent application] to U.S. Provisional Patent Application Serial No. 60/066,460, filed November 24, 1997, both of which [is] are incorporated by reference [for all purposes] herein.--

In the Claims

Claims 1-20 has been cancelled, and new claims 21-45 were added.